

REMARKS

The Examiner's action of September 8, 2003 is noted in which the Specification is objected to and in which there is an objection to Claim 14 for improper dependency. The claims are also rejected under 35 U.S.C. § 103.

Applicant herewith provides a change for the Specification in that, on page 2, "-160dB" is changed to "-160 dBm."

This leaves the rejection of the claims as being unpatentable over Kabler in view of McConnell.

As the Examiner quite rightly asserts, the Kabler reference does not teach the utilization of a shield between the GPS and the phone mother board. In point of fact, there is no shielding between the GPS receiver and the phone motherboard in Kabler, it presumably being considered by Kabler that the spacing of the GPS receiver from the phone motherboard was sufficient. However, in testing Garmin standard GPS receivers, it was found that in order to provide for sufficiently quick time to first fix, it was necessary to interpose a significant amount of shielding between the phone motherboard and the GPS receiver, regardless of the fact of whether the GPS receiver was shielded and/or spaced a great distance from the phone motherboard.

It is true that most GPS receivers come in shielded packages. However, it was found that the shielding of the GPS receivers was insufficient to eliminate interference between the RF section of the wireless telephone and the GPS receiver.

Specifically, after much testing the source of the interference to the GPS receiver was found. Noting that the center frequency for the A and B channels is 832 MHz, it was found that most cellular phones have a 90 MHz up or down convert between receive and transmit

frequencies or vice versa. The second harmonic is thus 1664 MHz which, when one subtracts 90 MHz, results in a resultant frequency of 1.574 GHz. The center frequency of GPS is 1.575 GHz.

This such a difficult situation that the interfering signals are almost down the throat of the GPS receiver. With GPS signals arriving at the surface of the earth at -150 dBm, any type of configuration which would decrease the time to first fix was dearly sought.

Garmin receivers early-on tested with Audiovox phones indicated a time to first fix on the order of 25 seconds without the shielding, which was reduced to 9 seconds with the shielding. This is a dramatic result and permitted the use of the GPS-equipped wireless handsets for emergency purposes.

Once having established that even a shielded standard GPS receiver needed further shielding; Applicant found that a layer of heavy shielding between the phone motherboard and the GPS receiver resulted in more favorable response times.

This leads to a discussion of the McConnell reference.

It will be appreciated that absolutely nowhere in the McConnell reference is shown a phone motherboard or in fact the existence of any wireless phone whatsoever. Note that a wireless phone has an active transmitter on the phone motherboard. What can be seen from McConnell is that McConnell is more interested in shielding the antenna from leakage from the GPS receiver. As mentioned above, this is not the interference which is most troublesome for the operation of a wireless handset with a GPS receiver.

Thus, when McConnell says at Column 3, Lines 57-59 that “during the operation of the GPS circuitry, RF leakage from the GPS circuit components may occur (emphasis supplied)” this leakage from the GPS circuit is not what needs to be shielded against. Rather it is interference

external to the GPS receiver that needs to be shielded against. As McConnell says, such leakage (from the GPS circuit) may interfere with the operation of the antenna. The shields 18 are positioned on both sides of the PCB 14 to cover the GPS circuitry so as to limit RF leakage interference.

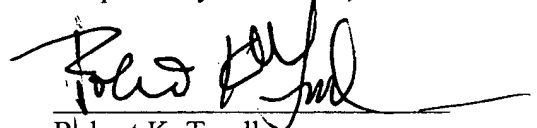
In short, the problem that the claimed subject matter solves is neither shown nor taught in any of the references cited. It would therefore not be obvious to add the teachings of McConnell to those of Kabler et al. Moreover, from McConnell it is the purpose of the shield 18 to provide a ground casing which functions as a "first antenna element." So its primary purpose is not for shielding.

It is Applicant's position that nowhere is taught the problem of any kind of GPS interference from wireless handset RF sections, much less a solution. Note that PC board 14 in McConnell is not a phone motherboard.

Thus, nowhere is shown or taught separate shielding between a shielded GPS receiver and a phone motherboard.

It is therefore Applicant's contention that the claims are in condition for allowance. Allowance of the claims and issuance of the case are therefore earnestly solicited.

Respectfully submitted,



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